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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/528,052

11/01/2005

Nobutoshi Arai

0020-5354PUS1

6379

2292 7590 11/14/2007  
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EXAMINER

VALENTINE, JAMI M

ART UNIT

PAPER NUMBER

2815

NOTIFICATION DATE

DELIVERY MODE

11/14/2007

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

## Office Action Summary

Application No.

10/528,052

Applicant(s)

ARAI ET AL.

Examiner

Jami M. Valentine, Ph.D.

Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 October 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 2-41 is/are pending in the application.
- 4a) Of the above claim(s) 2-7 and 9-32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 8, 33, 34 and 37-41 is/are rejected.
- 7) ☐ Claim(s) 35 and 36 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Status of the Application***

1. Acknowledgement is made of the amendment received 10/04/07. **Claims 2-41** are pending in this application with claims 2-7 and 9-32 previously withdrawn. Claim 8 was amended, claim 1 was cancelled and claims 33-41 were newly presented in the amendment received 10/04/07.

### ***Response to Arguments***

2. Applicant's arguments filed 10/04/07 have been fully considered but they are not persuasive. Applicant argues (page 17, paragraph 6) that Kado does not disclose a device having at least two memory cells. The examiner respectfully disagrees. Kado (paragraph 6 lines 27-31) teaches where multiple devices are fabricated in a process that includes the patterning of the multiple tunnel junction layer (6) into islands and then electrodes (conductive films) are formed on the multiple tunnel junction layer (6). Hence the limitation "at least two memory cells" is inherently disclosed.

3. "The PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product. Whether the rejection is based on inherency' under 35 U.S.C. 102, on prima facie obviousness' under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same...[footnote omitted]." The burden of proof is similar to that required with respect to product-by-process claims. In re Fitzgerald, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980) (quoting In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977)). See MPEP 2112 [R-3] V.

4. The rejections below are based on the same grounds as those of the previous Office

action, including more specific citations.

*Drawings*

5. The objection to the drawings has been withdrawn in light of the amendment received  
10/04/07.

*Specification*

6. The objection to the specification has been withdrawn in light of the amendment received  
10/04/07.

*Claim Objections*

7. The objection to claim 1 has been withdrawn in light of the amendment received  
10/04/07.

*Claim Rejections - 35 USC § 112*

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. **Claim 38** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

10. **Claim 38** recites the limitation “the two particles”. Claim 38 depends on claim 37 which depends on claim 8, however neither claim 37 nor claim 8 includes “two particles.” Rather, claim 37 recites “at least two kinds of particles” and claim 8 recites “a plurality of particles”. It is impossible to determine which two particles the claim might be referring to. Further there is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

11. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

12. **Claims 8, 33, 34 and 37-41** are rejected under 35 U.S.C. 102(b) as being anticipated by Kado et al. (US Patent No 5,731,598) hereinafter referred to as Kado.

13. Per **Claim 8** Kado (e.g. figures 1 and 6) discloses the fabrication of at least two memory cell devices including a resistance-changing function body arranged in a common plane parallel to a substrate (column 6 lines 27-36 discloses the patterning of multiple devices during one fabrication process) the resistance-changing function body of each of the memory cells comprising:

- an object made of a first substance (19) and interposed between a first electrode (21) and a second electrode (22); and
- a plurality of particles (17) made of a second substance and arranged within the object so that an electrical resistance between the first electrode and the second electrode is changed before and after application of a specified voltage to between the first electrode and the second electrode, (column 8 lines 17-30)
- wherein the first substance makes an electrical barrier against the second substance. (see column 8 lines 17-30)
- and the objects made of the first substance (19) of memory cells mutually adjacent in the direction parallel to the substrate are integrally continuously formed (column 8 lines 5-10)

14. Per **Claim 33** Kado (e.g. figure 6) discloses where each of the memory cells includes a rectifying function body (20) for determining a direction of current that flows through the resistance-changing function body. (column 8 lines 11-17 discloses a gate electrode, i.e. rectifying function body)

15. Additionally, claim 33 recites the performance properties of the device, e.g., “for determining a direction of current that flows through the resistance-changing function body.” This functional limitation does not distinguish the claimed device over the prior art, since it appears that this limitation can be performed by the prior art structure of Kado. While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429,1431-32 (Fed. Cir. 1997) See MPEP 2114.

16. Per **Claim 34** Kado (e.g. figure 6) discloses where each of the memory cells includes a rectifying function body (20) for determining a direction of current that flows through the resistance-changing function body. (column 8 lines 11-17 discloses a gate electrode, i.e. rectifying function body) and where the objects made of the first substance (19) and the rectifying function body (20) of memory cells mutually adjacent in the direction parallel to the substrate are integrally continuously formed (column 8 lines 5-10).

17. Additionally, claim 34 recites the performance properties of the device, e.g., “for determining a direction of current that flows through the resistance-changing function body.” This functional limitation does not distinguish the claimed device over the prior art, since it appears that this limitation can be performed by the prior art structure of Kado. While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus

must be distinguished from the prior art in terms of structure rather than function. In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997) See MPEP 2114.

18. Further, **claim 34** includes "product-by-process" limitations, e.g., "are integrally continuously formed." "While product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. In re Hirao, 190 USPQ 15 at 17(footnote 3). The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) See also in re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Fessmann, 180 USPQ 324; In re Avery, 186 USPQ 116 in re Wertheim, 191 USPQ 90 (209 USPQ 254 does not deal with this issue); and In re Marosi et al, 218 USPQ 289 final product per se which must be determined in a "product by, all of" claim, and not the patentability of the process, and that an old or obvious product, whether claimed in "product by process" claims or not. Note that Applicant has the burden of proof in such cases, as the above case law makes clear.

19. Per **Claim 37**, Kado discloses the device of claim 8 including where the plurality of particles in the resistance-changing function body include at least two kinds of particles, which are a relatively small particle and a relatively large particle. (e.g. CdSe, column 8 lines 17-18)

20. Per **Claim 38**, Kado discloses the device of claim 37 including where an angle at which a straight line interconnecting two particles intersects with a plane extending along a layer direction parallel to the substrate is not less than 45 degrees. (as in figure 6).

21. Per **Claim 39**, Kado discloses the device of claim 8 including where each of the particles

includes, in addition to a center part (17) which is made of the second substance and has a function of retaining electric charges, a coating part which covers the center part and is made of a material serving as a barrier against passage of electric charges through the coating part. The coating part is considered to be the part of the first substance which coats the center part (17).

22. Additionally, claim 39 recites the performance properties of the second substance. This functional limitation does not distinguish the claimed device over the prior art, since it appears that this limitation can be performed by the prior art structure of Kado. While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997) See MPEP 2114.

23. Regarding **claims 40 and 41**, these claims include "product-by-process" limitations. "While product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. *In re Hirao*, 190 USPQ 15 at 17(footnote 3). The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) See also *in re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 116 *in re Wertheim*, 191 USPQ 90 (209 USPQ 254 does not deal with this issue); and *In re Marosi et al*, 218 USPQ 289 final product per se which must be determined in a "product by, all of" claim, and not the patentability of the process, and that an old or obvious product, whether claimed in



"product by process" claims or not. Note that Applicant has the burden of proof in such cases, as the above case law makes clear.

*Allowable Subject Matter*

24. Claims 35-36 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

*Cited Prior Art*

25. The following prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Reference 1: US Patent No 3,719,933 by Wakabayashi et al.

Reference 2: US Patent Application Publication No 2002/0163831 by Krieger et al.

Reference 3: US Patent Application Publication No 2004/0161888 by Rinerson et al.

*Conclusion*

26. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

Application/Control Number:  
10/528,052  
Art Unit: 2815

Page 9

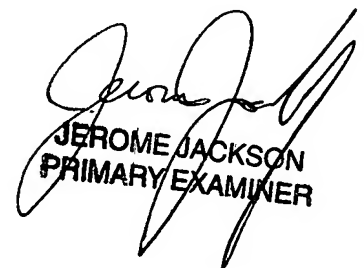
however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jami M. Valentine, Ph.D. whose telephone number is (571) 272-9786. The examiner can normally be reached on Mon-Thurs 9:00am-6pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Parker can be reached on (571) 272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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